

C l a i m s

1. A method for producing heat exchanger elements (8) comprising at least one heat exchanging conduit (2) for a heat exchanging medium, the element (8) being panel shaped, thus comprising two main surfaces (7) averted from each other and a peripheral surface (6) which connects the main surfaces, **characterized in** that at least one heat exchanging conduit (2) is laid onto a fibrous mat (1), and a cast mass in the form of at least one layer of a cast coating (3) is applied to the fibrous mat (1) so that the at least one conduit (2) extends at least partially in the cast coating (3), and the cast coating (3) together with the at least one heat exchanging conduit (2) adheres to the fibrous mat (1).
2. Method as claimed in claim 1, characterized in that at least a second layer (3b) of the cast coating (3) having a different grain proportion as compared with the first layer (3a) is applied, the first layer (3a) having preferably a coarser grain as compared with the second layer (3b) and particularly a smaller density.
3. Method as claimed in claim 1 or 2, characterized in that the grain proportion of the at least one layer is cured to a substantially solid cast coating (3) when a bonding agent is cured.
4. A heat exchanger element (8) comprising at least one heat exchanging conduit (2) for a heat exchanging medium, the element (8) being panel shaped, thus comprising two main surfaces (7) averted from each other and a peripheral surface (6) which connects the main surfaces, **characterized by** the production by a method according to claim 1, wherein the element (8) comprises a fibrous mat (1) and a cast coating (3), which cast coating (3) adheres to the fibrous mat (1), while the at least one heat exchanging

conduit (2) extends at least partially in said cast coating (3) and includes at least two branch necks (2a) in the region of the peripheral surface (6).

- 5 5. Heat exchanger element (8) as claimed in claim 4, characterized in that each branch neck (2a) comprises a flexible plastic pipe or is connectable to a flexible plastic pipe so that each branch neck (2a) may be connected to the branch neck (2a) of an adjacent heat exchanger element (8) or to a connection conduit (14, 15).
- 10 6. Heat exchanger element (8) as claimed in claim 4 or 5, characterized in that the fibrous mat (1) has a thickness of at least 25, optionally in a range of 30, but particularly in a range of 60 mm, and comprises preferably glass fibers, rock wool, silicate fibers or fibers of plastic material.
- 15 7. Heat exchanger element (8) as claimed in any of claims 4 to 6, characterized in that the cast coating (3) comprises at least a grain proportion and a bonding agent, but preferably two layers of different grain proportions, particularly a first layer (3a) adjacent to the fibrous mat (1), which has a coarse grain and, optionally a smaller density, and a second layer (3b) applied to said first layer (3a) comprising a finer grain and being particularly of higher density.
- 20 8. Heat exchanger element (8) as claimed in any of claims 4 to 7, characterized in that the cast coating has a thickness of 2 to 8 mm, preferably of 3 to 6 mm and/or that the cast coating comprises an aluminum hydroxide, particularly aluminum orthohydroxide.
- 25 9. Heat exchanger element (8) as claimed in any of claims 4 to 8, characterized in that the grain proportion comprises an average grain proportion comprises grains of an
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average particle size in the range of 0.1 to 0.5 mm, but preferably of 0.25 to 0.3 mm, the particle sizes varying, in particular, in the range of 0.1 to 0.5 mm, but preferably from 0.2 up to 0.4 mm.

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10. Heat exchanger element (8) as claimed in any of claims 4 to 9, characterized in that the at least one heat exchanging conduit (2) has an inner diameter of 0.8 to 5mm, preferably substantially 1 to 3mm, and is particularly
10 formed of plastic material, but optionally of metal at least in part.

11. Heat exchanger element (8) as claimed in any of claims 4 to 10, characterized in that the heat exchanging conduit
15 (2) extends substantially tangentially to said peripheral surface (6).

12. A method for assembling heat exchanger elements (8) as claimed in any of claims 4 to 10, **characterized in** that
20 at least two heat exchanger elements (8) joining to each other are attached to a room delimiting surface (9), that the at least two branch necks (2a) of a heat exchanger element (8) are connected to a heat exchanger circuit, that at least one covering element (12) is mounted join-
25 ing a heat exchanger element (8), and that a cast mixture is applied at least in the region of gaps (13) so that a substantially flat cast surface is obtained.

13. Method as claimed in claim 12, characterized in that the
30 uncoated main surfaces (7) of the fibrous mats (1), for fastening the heat exchanger elements (8), are glued to said room delimiting surface (9), wherein
in a first step, a first row of heat exchanger elements (8) are fastened with their first lateral surfaces
35 situated side by side,
in a second step, holding elements (18) are mounted to join the second side surfaces,

in a third step, a second row of heat exchanger elements (8) are fastened so as to join said holding elements (18) and their first side surfaces engaging each other, in a fourth step, the two branch necks (2a) of each heat exchanger element (8) are connected to a heat exchanger circuit, in a fifth step, the covering elements (12) are arranged at the holding elements (18), in a sixth step, the cast mixture is applied at least in the region of the gaps (13), and preferably in a seventh step, a flat surface is obtained by grinding, whereon a cover coating (3c) is optionally applied in an eighth step.

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14. Method as claimed in claim 12, characterized in that the uncoated main surfaces (7) of the fibrous mats (1), for fastening the heat exchanger elements (8), are glued to said room delimiting surface (9), wherein in a first step, a first row of heat exchanger elements (8) are fastened with their first lateral surfaces situated side by side, while spacer elements project from their second lateral surfaces, in a second step, a second row of heat exchanger elements (8), their first lateral surfaces engaging each other, are fastened so that they join said second lateral surfaces and are spaced by spacer elements, in a third step, the two branch necks (2a) of each heat exchanger element (8) are connected to a heat exchanger circuit, in a fourth step, the covering elements (12) are arranged at the spacer elements (18), in a fifth step, the cast mixture is applied at least in the region of the gaps (13), and preferably in a sixth step, a flat surface is obtained by grinding,

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whereon a cover coating (3c) is optionally applied in an seventh step.

15. Method as claimed in claim 12, characterized in that, for
5 fastening heat exchanger elements (8) comprising two parallel extending longitudinal channels (22) and at least one conduit (2) that interconnects said longitudinal channels (22), the uncoated main surface (7) of at least one fibrous mat (1) is glued to said room delimiting surface (9), at least one further element (8) having a layer
10 of glue and which is oriented towards said room delimiting surface (9) and is placed towards another element (8), which has already been mounted, under a small angle to the room delimiting surface (9), two male parts (21a) are plugged into corresponding female parts (21b), and
15 subsequently the connected element (8) having the gluing layer is fixed on said room delimiting surface.